

# PATENT ABSTRACTS OF JAPAN

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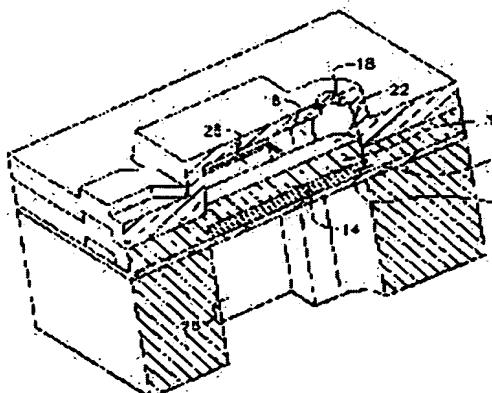
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## (54) THERMAL ACTUATOR

**(57)Abstract:**

**PROBLEM TO BE SOLVED:** To provide a thermal actuator for a micro mechanical device having an actuator beam improved in the degree of motion.

**SOLUTION:** The thermal actuator is taught for the micro electromechanical device. The thermal actuator has a base element, and a cantilevered element extending from the base element and normally present at a first position. The cantilevered element includes a first layer formed of a dielectric material having a low thermal coefficient of expansion, and a second layer attached to the first layer and comprising an intermetallic compound of titanium aluminide. A pair of electrodes are connected to the second layer so as to raise the temperature of the second layer by flowing a current to the second layer. The cantilevered element is displaced to a second position as a result of the temperature rise of the



second layer, and returns to the first position when the current flowing to the second layer stops and the temperature of the second layer decreases. The thermal actuator has a specific application in an ink jet device in which a series of the ink jet devices form an ink jet printing head.

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